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CULLASAJA RIVER

NATURAL AND SCENIC RIVER
FEASIBILITY STUDY AND RECOMMENDATIONS

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DIVISION OF PARKS AND RECREATION

DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

FORWARD

Session Law 1998-212, Section 14.8, passed by the 1998 Session of the General Assembly, directed the Department of Environment and Natural Resources to study the feasibility of including that portion of the Cullasaja River that borders Nantahala National Forest in the North Carolina Natural and Scenic River System. The results of the study and its recommendations are to be reported to the Joint Legislative Commission on Governmental Operations, the Fiscal Research Division, and the Environmental Review Commission. This study has been completed to fulfill the requirements of that legislation.

The Cullasaja River segment studied starts in Macon County at U.S. Forest Service property below the spillway of the Lake Sequoyah Dam. From there it flows 7.5 miles through the Cullasaja Gorge within the Nantahala National Forest.

EXECUTIVE SUMMARY

The North Carolina Natural and Scenic Rivers Act was passed in 1971 to preserve and protect outstanding free-flowing rivers, their water quality, and their adjacent lands for the benefit of present and future generations. The Act seeks to protect rivers with outstanding natural, scenic, educational, geological, recreational, historic, scientific, and cultural values, as well as fish and wildlife. Four rivers or river segments have been included in the system: the Linville River, New River, Horsepasture River, and Lumber River.

The Natural and Scenic Rivers Act sets minimum criteria for designation. The Cullasaja River within the Nantahala National Forest meets and exceeds these requirements for designation.

This report recommends that a 7.5-mile segment of the Cullasaja River starting at U.S. Forest Service (USFS) property below the spillway of the Lake Sequoyah Dam and running downstream through the Nantahala National Forest be designated as a Scenic River component of the North Carolina Natural and Scenic Rivers System. Because of the USFS's ownership of almost all of the 7.5-mile river corridor, no state land acquisition is proposed to protect the river segment recommended for designation; likewise, no state management activities requiring additional staffing are necessary. State designation, therefore, primarily offers recognition and prestige rather than resource protection.

State designation of this Cullasaja River segment within the Nantahala National Forest would recognize its outstanding natural resources. Of particular outstanding significance are the geology of the Cullasaja Gorge, its biologic resources, and its scenic beauty. The diversity of geologic units and geomorphic processes has authored within the gorge a series of geologic features that together produce not only aesthetic character but an area of geologic importance not duplicated in the Southern Blue Ridge. Three well-known scenic waterfalls, each with a different character, add to the gorge's beauty. The beauty of the river and the gorge has already resulted in its inclusion as a part of the Mountain Waters National Scenic Byway. The Cullasaja River Gorge is also included in the North Carolina Registry of Natural Heritage Areas.

Vegetation and wildlife along the upper Cullasaja are especially notable. Several high-quality and representative natural community types are present. The Montane White Oak Forest near Cliffside is rare. Four significant state-listed plant species are present including the tropical fern *Grammitis nimbata*, which has its only continental habitat here; the next nearest population inhabits the West Indies about 900 miles south. Notable wildlife found in the gorge and river includes eight species that are state-listed as either Significantly Rare or Special Concern.

The USFS has identified the Cullasaja River Gorge for special management in the forest management plan to protect and maintain the scenic, biological, and geological features. USFS ownership and management has and will continue to protect the Cullasaja River Gorge and its outstanding resources for present and future generations. The USFS manages the gorge to allow low-impact recreation so that these resources can be seen, learned about, appreciated, and enjoyed. State designation of the Cullasaja is consistent with USFS management of the gorge.

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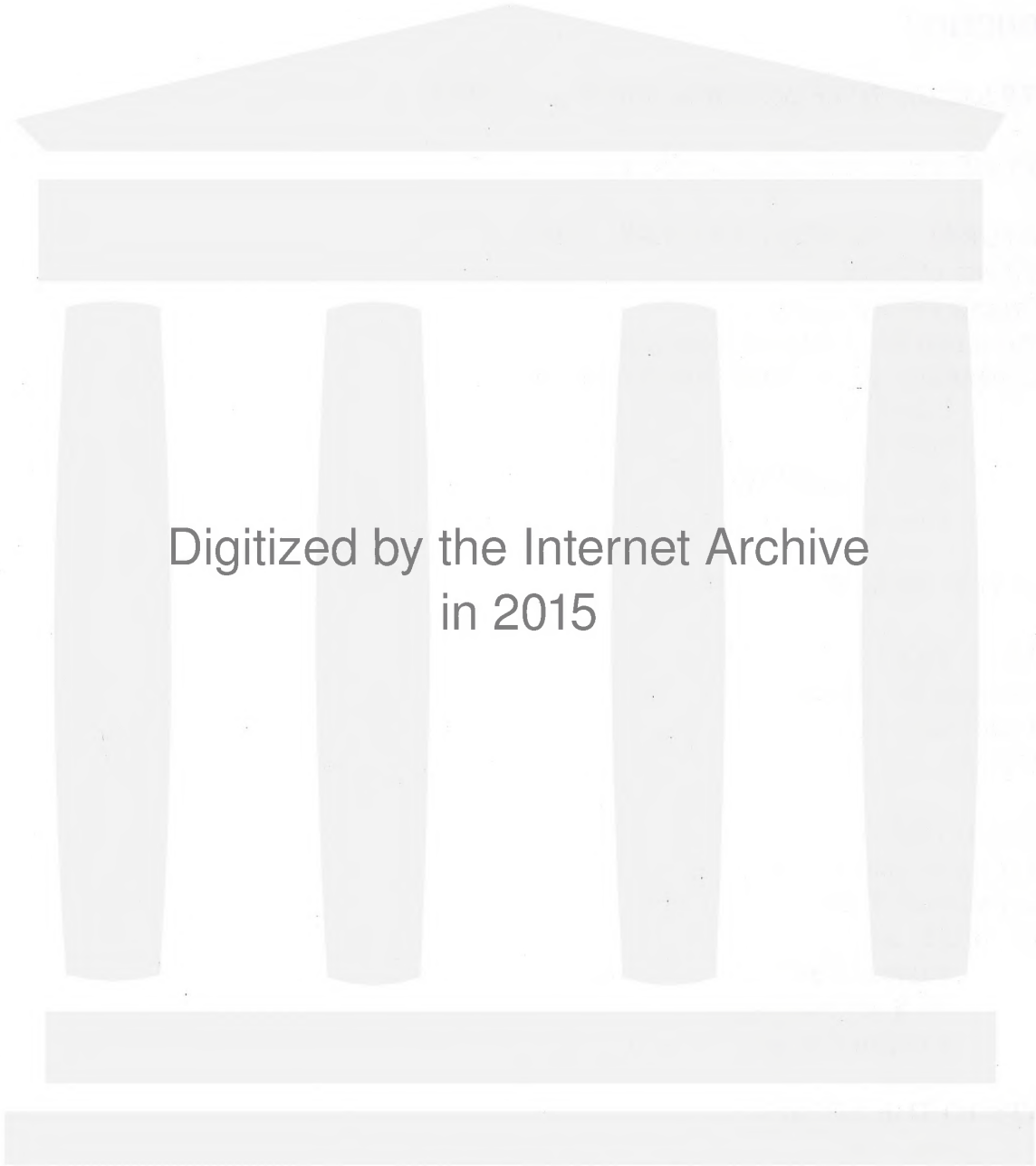

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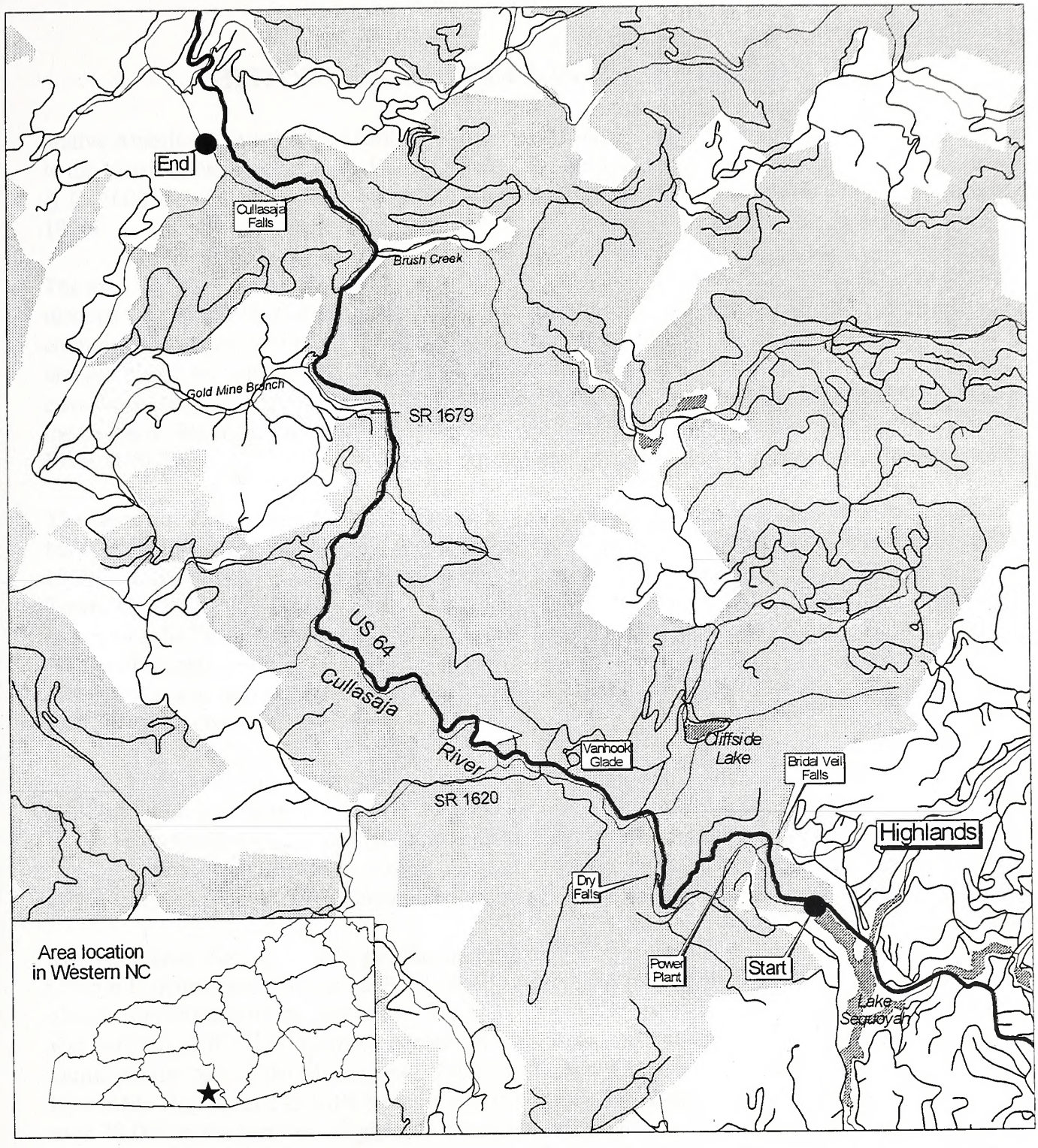
INTRODUCTION

The Cullasaja River, a tributary of the Little Tennessee River, rises in southeastern Macon County around Lake Ravenel, upstream of the town of Highlands. After flowing through two man-made lakes (Mirror Lake and Lake Sequoyah), the river enters the Nantahala National Forest just below the spillway of the Lake Sequoyah Dam. From there it flows through the Cullasaja Gorge. U.S. 64, a U.S. Forest Service Scenic Byway, parallels the river through the gorge, but only a few short sections of the highway are visible from the river. After leaving Nantahala National Forest, the Cullasaja meanders through residential and agricultural lands before merging with the Little Tennessee River at Franklin.

The Nantahala National Forest segment of the river flows through the remarkable Cullasaja Gorge, where the river falls 1,300 feet in the 7.5 miles that is the focus of this study. This segment of river has three well-known scenic waterfalls, and its geology and vegetation are also outstanding. The N.C. General Assembly has directed that this 7.5-mile segment be studied for possible designation by the General Assembly as a North Carolina Natural and Scenic River. The USFS welcomes and concurs with state study for designation of the Cullasaja.



Cullasaja River
Natural & Scenic River
Study Area

March 1999

USFS Land
Stream
Roads
US
NC
Other

N

Division of Parks and Recreation
Comprehensive Planning Program

HISTORY OF THE CULLASAJA RIVER AREA

Native Americans occupied the Cullasaja River area from the early Archaic period ca. 7000 B.C. to the Mississippian period ca. A.D. 1500, and Cherokee Indians intensely occupied the area from A.D. 1600 to A.D. 1790. Most of the Cherokee were forced out in the Removal of 1838 (Moore, 1994).

The area was explored in 1540 by the Spanish conquistador Hernando De Soto. De Soto's route through western North Carolina was determined after President Roosevelt in 1934 established a commission to study and report on his travels. According to the commission's records, De Soto crossed the Chattooga at or near Burrell's Ford south of Highlands. His route of travel apparently came through Horse Cove where in May, 1540 he camped near Highlands. He then traveled down the Cullasaja River through the gorge to Sugar Town and Cowee Town and west to the Hiwassee River (USFS).

The name Cullasaja comes from a Cherokee word, *Kul-say-gee*. It's precise meaning is unclear, but it apparently meant *sugar, sweet, pouring sugar, sweet water,* or *honey-locust place* (Powell, 1968; USFS). The Cherokees maintained a large camp on the Cullasaja River known as Sugar Town (USFS). Sugar Town is now called Cullasaja (Powell, 1968). The Indians farmed, fished, and hunted the Cullasaja area and worked the old soap stone quarry located at Fishhawk Mountain. William Bartram described the farming in his writing about his travels in 1776 through the area. Sugar Town was burned in 1776 by an army of 1,860 men from Charles Town lead by Colonel Andrew Williamson.

The first white settlers settled in the Cullasaja Valley in 1820. Early settlers farmed and cut chestnut trees to obtain tannic acid to process leather for many purposes, including shoes. Corundum was discovered in 1870 at Corundum Hill and was mined for several years. Gold was mined about 1860 on Gold Mine Creek. Semi-precious stones, such as garnets, sapphires, rubies and amethyst, are found in the area today, and rock hounding is a popular pastime (USFS).

The Highlands Plateau — a large, flat mountain top — was purchased by Samuel Kelsey and Clinton Hutchinson in March 1875. In 1876, they sent flyers out to other states advertising the climate and altitude of the new town. By 1833, when Highlands had grown to 300 residents, it was incorporated. The town's average altitude is 4,118 feet, making it one of the highest municipalities east of the Mississippi. The cool summers, relaxed pace, and spectacular scenery have made Highlands a popular summer resort. The current population of about 2,000 swells to over 20,000 in the summer (Highlands Chamber of Commerce).

Commercial timber cutting started in 1908 on Walnut Creek. The first sawmill was a water-powered mill on Peeks Creek about 1900. The first big lumbering operation was undertaken by Zickgraf in 1919. Timber sales continued in the area after it was purchased by the USFS (USFS). In the Cullasaja Gorge, the last timbering was probably associated with the salvage of blighted American chestnut trees in the 1940s (Roe and Mansberg, 1984).

Development of Highlands and Macon County continued in the 1920s. Highlands built a hydroelectric dam and generating plant, and several roads — including one through the rugged Cullasaja Gorge — were built. By 1930, a total of 13,672 people lived in Macon County (Fifteenth Census, 1931). The 1999 population is approximately 26,600 (Office of State Planning).

The prosperous 1920s were followed by the Great Depression. After the market crash of 1929, timbering and mining — which had proven financially beneficial to many — ground to a halt. Hundreds were left unemployed. Some relief came with federal programs such as the Works Progress Administration (WPA) and the Civilian Conservation Corps (CCC) and their building projects. The CCC opened its first camp in the County in 1933. Its most crucial activities were road building and improvements in the National Forest. The WPA built two schools, built roads and bridges, quarried stone, taught sewing and other classes, and updated county records (Martin, 1994).

The Nantahala National Forest was established in 1920 under authority of the 1911 Weeks Act. The Weeks Act, a forerunner of the 1960 Multiple Use Act, directed that lands be acquired for national forests to provide for timber production and regulation of flow of navigable streams. The Nantahala National Forest is now managed under the ecosystem concept for the sustainable use of natural resources such as air and water, wildlife habitat, forest products, biological diversity, outdoor recreation, wilderness, and serenity. In Macon County, there are approximately 152,400 acres of national forest land (USFS and Franklin Area Chamber of Commerce).

THE NATURAL AND SCENIC RIVERS ACT

The Natural and Scenic Rivers Act was passed in 1971 by the General Assembly to preserve and protect outstanding free-flowing rivers, their water quality, and their adjacent lands for the benefit of present and future generations. The Act seeks to protect rivers with outstanding natural, scenic, education, geological, recreational, historic, scientific, and cultural values, as well as fish and wildlife.

In passing the Act, the General Assembly recognized the "*. . . necessity for a rational balance between the conduct of man and the preservation of the natural beauty along the many rivers of the State*," and "*. . . that the preservation of certain rivers or segments of rivers in their natural and scenic condition constitutes a beneficial public purpose.*" The Act establishes a Natural and Scenic Rivers System and prescribes methods for including components (G.S. 113A-30 through 113A-32). Rivers may only be added to the system by action of the General Assembly.

Classes of Rivers

The Natural and Scenic Rivers Act defines three classes of rivers as being eligible for inclusion in the Natural and Scenic Rivers System: natural river areas, scenic river areas, and recreational river areas. They are defined as follows:

> Natural river areas — *Those free flowing rivers or segments of rivers and adjacent lands existing in a natural condition. Those rivers or segments of rivers that are free of man-made impoundments and generally inaccessible except by trail, with the lands within the boundaries essentially primitive and the waters essentially unpolluted. These represent vestiges of primitive America.*
>
> Scenic river areas — *Those rivers or segments of rivers that are largely free of impoundments, with the lands within the boundaries largely primitive and largely undeveloped, but accessible in places by roads.*
>
> Recreational river areas — *Those rivers or segments of rivers that offer outstanding recreation and scenic values and that are largely free of impoundments. They may have some development along their shorelines and have more extensive public access than natural or scenic river segments. Recreational river segments may also link two or more natural and/or scenic river segments to provide a contiguous designated river area.* (G.S. 113A-34)

Criteria for Designation

To be designated as either a natural, scenic, or recreational river, the following criteria must be present:

1. River segment length must be no less than one mile.
2. Boundaries of the system shall be the visual horizon or such distance from each shoreline as may be determined to be necessary, but no less than 20 feet.
3. Water quality shall be at least class "C".
4. Water flow shall be continuous and not subjected to withdrawal or regulation to the extent of substantially altering the natural ecology of the stream.
5. Public access shall be limited, but may be permitted in keeping with the purpose of the Act. (G.S. 113A-35)

Protection Provided by Designation

The Natural and Scenic Rivers Act is not a regulatory act. Confusion about this has sometimes led to private property owners opposing state designation of rivers flowing through their property. No land-use controls or zoning are part of the Act. The Natural and Scenic Rivers Act does offer protection for designated river segments by restricting project works, such as dams, reservoirs, water conduits, transmission lines, and water resources projects that would have direct and adverse affects (G.S. 113A-44); by permitting acquisition of riparian lands in either fee simple or lesser interests, such as conservation easements (G.S. 113A-38); and by management activities that may be instituted by the state in performing its duties and responsibilities (G.S. 113A-36). Of the three types of protection authorized by the Natural and Scenic Rivers Act, only the restriction on projects works automatically occurs upon designation. Riparian lands are not affected until acquisition of land or interests in land takes place by the state.

However, in the case of the 7.5-mile Cullasaja River segment, no state land acquisition or management activities are necessary. The corridor is either owned by the USFS or lies in the Nantahala National Forest's acquisition boundary, and the USFS has been and will continue its management of the area.

Components of the Natural and Scenic Rivers System

Since 1971, only four rivers — approximately 146 river miles — have become components of the Natural and Scenic Rivers System. These are the New River, the Linville River, the Horsepasture River, and the Lumber River. All but the Lumber River are located in the western part of the state.

Linville River

The 13-mile long natural river segment of the Linville River, designated in 1975, flows through property owned by the National Park Service and the USFS. No state land ownership exists along the designated segment, nor is the Division of Parks and Recreation involved with any staffing or management activities for the segment. The area is protected by its wilderness designation and management by federal agencies. Designation as a state river has been largely symbolic; no state staffing or management activities have taken place, nor are any necessary in light of the federal ownership and designation as a wilderness area. Designation of the 7.5-mile Cullasaja River segment would be similar to the Linville River as far as the absence of state land acquisition and state management activities are concerned.

New River

A total of 26.5 miles of the New River were designated as a scenic river in 1976. The state has been able to acquire 1,539 acres in fee simple and easements in an attempt to provide protection for portions of the river corridor and to provide land for access and recreation development. Legislation limits the state to a total of only 2,200 acres. The state lands are located primarily in three clusters: one at the beginning of the designated segment, one near the middle, and one near the North Carolina/Virginia state line. Approximately 90% of the riparian lands along the designated segment is not adequately protected and is therefore subject to activities which would be detrimental to the scenic character of the river. Increasingly, the riparian lands are being subdivided and developed, primarily as vacation homes. The 26.5 miles are also a federal Wild and Scenic River.

Horsepasture River

The state does not own any land or provide any staffing and management for the Horsepasture natural river segment which was designated in 1985. The 4.5-mile segment flows through property owned primarily by the USFS and Duke Energy. Duke Energy and the state are currently nearing closing on the sale of Duke's property in this area. This Horsepasture River segment is also a federal Wild and Scenic River.

Lumber River

The 1989 General Assembly designated 115 miles of the Lumber River as a component of the Natural and Scenic Rivers System. The designation included natural and scenic segments. Lumber River legislation also created a new river class, recreational, and gave this designation to segments of the river. Lumber River State Park has been established along the Lumber River and land acquisition continues. The City of Lumberton has aided protection by establishing a Lumber River Protection Overlay District. Eighty-one miles of the Lumber River also have designation as a federal Wild and Scenic River.

EVALUATION OF MINIMUM CRITERIA

The 7.5-mile Cullasaja River segment meets the five minimum criteria that must be present for inclusion in the Natural and Scenic Rivers System (G.S. 113A-35). The evaluation of those criteria follows.

1. *River segment length-must be no less than one mile.*

The 7.5-mile segment through the Gorge exceeds the minimum length.

2. *Boundaries of the system shall be the visual horizon or such distance from each shoreline as determined to be necessary by the Secretary, but shall not be less than 20 feet.*

A minimum protection boundary seems logical as a part of criteria for the rivers system, yet, as the system currently exists, most of the designated natural and scenic river miles have no such 20-foot minimum. The Natural and Scenic Rivers Act is non-regulatory, so private property rights remain with riparian owners unless the state purchases property or lesser interests, such as easements. There has been confusion over the years concerning this provision of the Act, particularly from private property owners along streams, and clarification of this provision of the statute is needed. However, by its actions to designate the rivers that now comprise the Natural and Scenic Rivers System, the General Assembly has indicated that a boundary is a goal to work towards, not a prerequisite.

The 7.5-mile Cullasaja River segment flows almost entirely through USFS-owned property, and most of the visual horizon is a part of the Nantahala National Forest. It is protected by federal ownership. Therefore, like the Linville and Horsepasture rivers already designated as State rivers, the Cullasaja River segment meets this criterion.

In addition, the Trout Waters classification by the N. C. Division of Water Quality establishes a 25-foot vegetative buffer along the river.

3. *Water quality shall not be less than that required for Class "C" waters as established by the N. C. Environmental Management Commission.*

All surface waters in North Carolina are assigned a primary classification, and all waters must meet the standards for Class C waters. Class C waters are protected for secondary recreation, fishing, wildlife, fish and aquatic life propagation and survival, agriculture and other suitable uses. Secondary recreation includes wading, boating, and other uses involving human body contact with water where such uses take place in an infrequent, unorganized, or incidental manner. There are no restrictions on watershed development.

The Cullasaja River from the Lake Sequoyah Dam downstream to the Little Tennessee River in Franklin is classified as Class B Tr, which means that it is suitable for primary recreation in addition to the other uses suitable for Class C. Therefore, this Cullasaja River segment exceeds the minimum water quality criteria.

This Cullasaja River segment also has the supplemental Trout Waters (Tr) classification. This supplemental classification is intended to protect freshwater for natural trout propagation and survival of stocked trout. The Trout Waters classification affects wastewater discharges, but there are no watershed development restrictions except a 25-foot stream buffer zone requirement of the N.C. Division of Land Resources.

4. *Water flow shall be sufficient to assure a continuous flow and shall not be subjected to withdrawal or regulation to the extent of substantially altering the natural ecology of the stream.*

Even though the Cullasaja River segment flowing through the gorge begins at the Lake Sequoyah Dam, it can be considered free-flowing downstream of the spillway since water flow is continuous and is sufficient to support the river's outstanding resources. Lake Sequoyah is a recreational reservoir and does not regulate downstream flows in the river. Through the gorge, the Cullasaja flows in its natural condition without impoundments, diversions, straightening, rip-rapping, or other modifications.

5. *Public access shall be limited, but may be permitted to the extent deemed proper by the Secretary, and in keeping with the property interest acquired by the Department and the purpose of this Article.*

Access to the river is primarily provided by USFS parking facilities located at Dry Falls and by roadside parking along U.S. 64 as it parallels the river through the gorge. Two bridges cross the river in the gorge, at SR 1620 near Vanhook Glade and at SR 1679 near Gold Mine Branch. A few other local roads join U.S. 64 but do not cross the river. While U.S. 64 parallels the river, vegetative buffer and topography combine to limit access and visibility from the highway.

Access is too extensive to allow designation as a natural river. Natural river areas are generally inaccessible except by trail and essentially primitive. However, access to the Cullasaja River in the Cullasaja Gorge is limited, as the gorge is largely primitive and largely undeveloped. In addition, accessibility in places by roads is permitted under the Natural and Scenic Rivers Act. Therefore, the 7.5-mile Cullasaja River segment meets the public access criterion for both scenic and recreational classes of rivers as defined by the Natural and Scenic Rivers Act.

EVALUATION OF OUTSTANDING RESOURCES

The Natural and Scenic Rivers Act seeks to preserve and protect rivers with outstanding natural, scenic, educational, geological, recreational, historic, scientific, and cultural values, as well as fish and wildlife, of great present and future benefit to the people (G.S. 113A-31). The 7.5-mile Cullasaja River segment flowing through the Cullasaja Gorge possesses several such outstanding resources. These outstanding resources make the Cullasaja River segment a worthy addition to the Natural and Scenic Rivers System. Their evaluation follows.

Geologic Resources

The Cullasaja Gorge in Macon County between Highlands and Franklin is one of many spectacular gorges that cut through the Blue Ridge Mountains in North Carolina. However, its canyon-like profile, with a steep gradient of approximately 180 feet per mile, make it unique among these rivers in western North Carolina that flow into the Tennessee, Ohio, and Mississippi River system. The scenic beauty of the gorge is enhanced by three large waterfalls, numerous small falls, cascades, and rapids.

Along its 7.1-mile winding traverse through the gorge, the Cullasaja River erodes through a sequence of 600- to 800-million-year-old metasedimentary rocks, which are intruded by two different igneous intrusive bodies of similar age (approximately 390 million years). The metasedimentary rocks are a repetitious sequence of light-gray to medium dark-gray, medium- to coarsed-grained, medium- to thick-layered muscovite-biotite gneiss. Locally, the layers are interlayered with biotite garnet gneiss, biotite-muscovite schist, garnet mica schist, amphibolite, and calc-silicate granofels.

Underlying much of the Highlands area just east of the gorge is a very large body of grandiorite to quartz diorite igneous intrusive rock. Although this intrusive does not occur in the gorge, field evidence suggests that fluids from this pluton altered the older metasedimentary rock of the upper end of the gorge during crystallization. This alteration caused an increase in grain size and in abundance of muscovite. In addition, gneiss layers within the sediments became more enriched in felsic material. Locally, these altered rocks are very migmatitic and pegmatitic.

Between Gold Mine Branch and Brush Creek, the Cullasaja River exposes the second igneous intrusive rock in this region. This intrusive is a light-gray, weakly foliated to foliated, massive, megacrystic granodiorite to quartz monzonite. It is the megacrystic character that makes these rocks very distinctive.

Geomorphologically, the Cullasaja Gorge is characterized by very steep-sided valley walls. Commonly, bare rock faces and cliffs are exposed on the mountain slopes. The river passes over two prominent waterfalls and numerous small falls and cascades.

In addition, Bridal Veil Falls occurs along a small tributary stream entering the Cullasaja River in the upper part of the gorge. A shallow, broad stream of water flows across flat-lying, coarse-grained muscovite-biotite gneiss and schist. The falls were created by a combination of the following: (1) More rapid down cutting of the Cullasaja River because of its higher volume, (2) the nearly horizontal layering of the bedrock which makes it erode much more uniformly and slowly.

Dry Falls on the Cullasaja River is very similar to Bridal Veil Falls. A large, amphitheater-shaped overhang exists beneath and behind the falls. Here, one can walk beneath the southeast dipping overhang without getting wet. This overhang, like the one at Bridal Veil Falls, was most likely created by the turbulence of the falling water at the base of the falls cutting back into the less resistant rock that underlies the resistant ledge of quartz biotite gneiss. The narrow channel in the river below the falls appears to be controlled by two intersecting joint (fracture) surfaces in the rock.

The third falls, Cullasaja Falls, located at the bottom of the gorge, is the most spectacular. The falls here consist of a series of nearby vertical drops across unaltered metasedimentary rocks with differing resistance to erosion. These layers of differing erosion resistance form the steps and cascades in the Cullasaja Falls (Merschat, 1999).

These unique and outstanding geologic resources warrant state natural and scenic river designation.

Scenic Resources

The scenic resources of the upper Cullasaja River and the Cullasaja Gorge are of statewide and national significance. The marvelous mountain vistas and the sites and sounds of white-foaming waterfalls have long attracted people to the area.

The 7.5-mile Cullasaja River Gorge is part of the Mountain Waters National Scenic Byway, a 61.3-mile drive that winds through southern Appalachian hardwood forest, the spectacular Cullasaja and Nantahala river gorges, and rural countryside. U.S. 64 winds its way through the Cullasaja Gorge, paralleling the river's rugged course and offering scenic views of the river, gorge, forest and waterfalls.

The Cullasaja River drops 1,300 feet as it flows through the gorge. Some of the drop creates beautiful waterfalls, while in other places cascades, riffles, and rapids abound. Slower moving, peaceful stretches of river are also found in the gorge. Majestic views of the mountains, forests, and cliffs combine with the river's varied looks to give both variety and unforgettable beauty to the area. The seasonal colors of the forest trees and plants and the ever-changing light patterns make the Cullasaja River and the gorge a haven for amateur and professional photographers.

The Cullasaja River is perhaps best known for three waterfalls. Bridal Veil Falls is created by a tributary of the Cullasaja. It falls 120 feet, creating a veil of water that cars can drive behind. The water from the falls flows under U.S. 64 and down into the gorge to its confluence with the Cullasaja.

Dry Falls, originally known as Cullasaja Falls, drops 75 feet as it plunges over a rock shelf. In the Great Depression era of the 1930s, CCC workers, while improving the path to the falls and building observation points, renamed the falls Dry Falls because they could walk behind the falls without getting soaked. The scenic falls are a pleasant walk from a USFS parking area located just off of U.S. 64. Visitors may still walk behind the falls, feel the mist and spray from the falls, feel and hear the power of the river, and view spectacular scenery as the river drops into the rugged rocks.

Further downstream, Cullasaja Falls is a picturesque falls that cascades about 250 feet downward through rocks worn from the force of the water. The falls and spectacular vertical rock faces can be seen from the highway. Unfortunately, no safe and suitable parking site exists at this area.

Other waterfalls are also found in the Cullasaja Gorge. The Kalakaleskies are a series of 18 small falls or cascades that each fall 5 feet to 40 feet in a .25-mile stretch of the river just below the Lake Sequoyah Dam and above Dry Falls. Raven's Cliff or Shut-In Falls downstream of Dry Falls are about 60 feet high. Quarry Falls or Sliding Rock, named for an old quarry nearby, attracts many bathers, swimmers, and divers who jump from the high cliff below the rapids.

The river corridor through the gorge possesses a high level of scenic integrity, and its landscape is largely intact and natural in appearance for most of its 7.5 miles. The gorge, however, does have some visual intrusions. A few vacation homes are visible adjacent to the river, and a couple of bridges serving local roads cross the river. The houses are generally well-screened and set back from the river and — like the bridges and USFS public-use areas — are generally attractive in their own right. A major power transmission line crosses the river twice near Bridal Veil Falls and again approximately halfway through the gorge. U.S. 64 provides the primary evidence of man as it parallels the river through much of the gorge. Access to the river from U.S. 64 is, however, limited. Taken together, all these man-made intrusions are but a small detraction along the 7.5-scenic miles of the upper Cullasaja River.

The National Geographic Society, in its book *Blue Ridge Range*: *The Gentle Mountains*, called the Cullasaja ". . . one of the most scenic streams in North Carolina." Because of the area's beauty, books and brochures about the North Carolina mountains often contain photographs of the Cullasaja River and its waterfalls. The upper Cullasaja River's scenic resources warrant its designation as a North Carolina Natural and Scenic River.

Biological Resources

The Cullasaja River Gorge contains landforms that are scenically beautiful and geologically unique in the Southern Blue Ridge. These landforms host vegetation that is especially notable. The waterfalls and their spray and mist combine with the land to provide microclimates that add to the biological diversity. The Spray Cliff communities here are among the best examples in the Southern Appalachians.

Plant species considered rare in North Carolina have been found in the Cullasaja Gorge, especially in the Spray Cliff communities. Particularly notable are several tropical and northern fern species. The single population of the state-listed Endangered species, dwarf polypody fern (*Grammitis nimbata)*, was discovered in the 1960s. Its occurrence is the only known population outside of the West Indies about 900 miles south; it now exists only in the gametophyte stage. The state-listed Threatened species, Appalachian filmy-fern *(Trichomanes boschianum*), the Southern Appalachian endemic Biltmore sedge *(Carex biltmoreana)*, the northern beech-fern *(Thelypteris phesopteris)*, and the candidate species rock clubmoss *(Huperzia porophila)* are also present in the gorge. Also notable is the outstanding collection of rare mosses and liverworts, which include nine globally rare species.

The upper Cullasaja area is home to several high-quality and representative natural community types. The Montane White Oak Forest, a stand of white oak *(Quercus alba)* on the ridge top and east-facing slopes of the Clifftop Vista near Cliffside Lake, is a good example of this rare Southern Blue Ridge forest type. Its presence in a reserved USFS recreational area and its proximity to the Highlands Biological Station increases its importance for scientific study and environmental education. This white oak stand is one of the few protected occurrences of this community type in the Southern Blue Ridge outside of the Smoky Mountains. Canada hemlock and white pine forest communities make the mountain an interesting blend of communities.

Acidic Cove Forest communities cover most of the area of the gorge. These forests are dominated by tulip poplar (*Liriodendron tulipifera)*, Canadian hemlock (*Tsuga canadensis*), red maple *(Acer rubrum*), Fraser's magnolia (*Magnolia fraseri*), silverbell (*Halesia carolina*), and other hardwoods. Somewhat unusual is the presence of fire cherry (*Prunus pensylvanica*), which is usually found above an elevation of 5,000 feet. The dense shrub layer of doghobble (*Leucothoe axillaris* var. *editorum*), blueberry (*vaccinium* spp.), and rosebay or great laurel (*Rhododendron maximum*) creates a lush but nearly impenetrable cover on the rugged slopes.

Given the ruggedness of the gorge, other notable features may remain undiscovered there.

The last significant timbering along the upper Cullasaja was probably associated with the 1940 salvage of blighted American Chestnut trees (*Castanea dentata*). The USFS has designated most of its land in the gorge as a Special Interest Botanical Area and has placed it on the state's Registry of Natural Heritage Areas. Future timber management will be limited to maintenance of scenic observation points by vegetation removal, tree thinning and prescribed burning, removal of

hazardous dying trees along roadsides, and other such cases (Roe and Mansberg, 1984; Schafale, 1999).

Animal species considered rare in North Carolina have been found in the Cullasaja Gorge and in the Cullasaja River below the gorge. Three Significantly Rare species documented in the gorge are the timber rattlesnake (*Crotalus horridus horridus*), the yellow-bellied sapsucker (*Sphyrapicus varius*) and a butterfly, the appalachian azure (*Celastrina neglectamajor*). One Special Concern species, the long-tailed shrew (*Sorex dispair*) is also found in the gorge. The Significantly Rare species raven (*Corvus corax*) nests in rock outcrops adjacent to the gorge at Cliffside.

Three important species are found in the river. The Significantly Rare species little Tennessee crayfish (*Cambarus georgiae*), Special Concern species wounded darter (*Etheostoma vulneratum*), and the olive darter *(Percina squamata*), a Special Concern species and federal species of Concern, have been found in the river downstream from the gorge and outside of the 7.5-mile study area.

The Cullasaja Gorge has a very cool microclimate, such that birds typical of spruce-fir also nest here, but in hemlock and white pine since spruce and fir are absent. These species, near their lower limit of breeding occurrence in North Carolina, include the golden-crowned kinglet, red-breasted nuthatch, brown creeper, winter wren, and others. Large numbers of blackburnian warblers, a rather uncommon bird in North Carolina, nest in the gorge (LeGrand, 1999).

Wildlife populations of species typical to the North Carolina mountains can also be found in the Cullasaja Gorge. Species include white-tailed deer, bobcat, coyote, mink, muskrat, raccoon, ruffed grouse, wild turkey, grey squirrel, southern flying squirrel, fox, opossum, and wood duck. While these populations are fairly typical, areas under public ownership such as the gorge are becoming increasingly important wildlife habitat as the North Carolina mountains continue to be developed (Brooks and Carraway, 1999).

The presence of rare and endangered plant species, rare animal species, the unusual juxtaposition of tropical and northern ferns, and the high-quality and representative natural community types make the upper Cullasaja River worthy of designation as a North Carolina Natural and Scenic River.

EVALUATION OF OTHER RESOURCES

Several other resources, while not being outstanding in the sense of having statewide or national significance, nonetheless serve to support Natural and Scenic River designation. Descriptions of these locally or regionally significant resources follow.

Archaeological Resources

Archaeological resources on the Cullasaja River are largely unknown. The Little Tennessee River valley, along with its major tributaries, is considered to hold some of the most significant archaeological resources in western North Carolina. Most of the recorded archaeological sites within the region represent intense occupation by the Cherokee Indians from ca. A.D. 1600 to A.D. 1790. However, there are also sites representing Cherokee inhabitants into the nineteenth century, including the homesites of individual Cherokee families who were physically forced from their land during the Removal in 1838. In addition, many other sites represent every period of Native American history from the early Archaic period ca. 7000 B.C. to the Mississippian period ca. A.D. 1500.

During the 1960's, archaeologists from the University of North Carolina at Chapel Hill conducted a preliminary survey of Cherokee sites within the region. That survey identified sixteen archaeological sites along the lower Cullasaja from Pine Grove School to Franklin. Unfortunately, no surveys have been conducted since then. But it is likely that the lower portion of the river valley contains at least that same number of sites that have yet to be identified. It is also likely that some of these sites are eligible for listing on the National Register of Historic Places.

Regarding the 7.5-mile segment of the upper Cullasaja that is the focus of this study, very little is known about its archaeological sites. The only surveys that have been conducted in this area consist of relatively small areas surveyed in connection with USFS development projects. Nonetheless, one site has been identified along the river and four others in close proximity to the river. Certainly, a thorough survey would be expected to yield numerous additional sites. Sites along this portion of the river would date primarily from the Archaic period ca. 7000 B.C. to 1000 B.C. (N.C. Division of Archives and History, 1994; Moore, David, 1999).

At this time, no unique or exemplary sites are known to exist that would make archaeological resources of the upper Cullasaja outstanding enough to support designation as a North Carolina Natural and Scenic River.

Recreational Resources

People from across the state, the nation, and foreign countries are drawn to the Nantahala National Forest by its scenic beauty and special features. While there, they participate in a variety of outdoor recreation activities. Many of these are available along the upper Cullasaja River.

The USFS management emphasis for the Cullasaja Gorge is to allow low-impact recreation for viewing scenery, nature study, and photography. To this end, the USFS provides limited recreational and support facilities. These include trails, picnic areas, scenic overlooks, restrooms, and parking.

At Vanhook Glade, located just north of the river near the confluence with Long Branch, the USFS operates a small 21-site tent and trailer campground that includes picnic tables, grills, drinking water, and restrooms. The campground is nestled into Canada Hemlock and White Pine Forest. Campers may hike or drive approximately 1½ miles to the Cliffside Recreation Area where showers are available. Cliffside Lake is located about one mile north of Dry Falls on Skitty Creek, a tributary of the Cullasaja that joins the river downstream of Dry Falls. Picnic areas, two picnic shelters, a bathhouse, toilets, and several hiking trails are available, including an interpretive loop trail that describes shrubs and trees along the scenic Clifftop Vista Trail. A .5-mile loop trail around the lake offers hikers an easy level walk. Swimming and fishing at Cliffside Lake are popular.

The upper Cullasaja River and Cullasaja gorge have renowned scenic beauty that attracts sightseers and both amateur and professional photographers. Walking along the stream, picnicking on boulders along the river, wading, and swimming are all popular activities.

The Cullasaja River is hatchery supported designated Public Mountain Trout Water for 13 miles below the Lake Sequoyah Dam and also provides habitat for wild trout. The Wildlife Resources Commission annually stocks approximately 7,500 catchable-sized brook, rainbow, and brown trout from March to August. In general, fishing pressure in the 13 miles has been described as heavy, probably due to the proximity of U.S. 64 to the river and the public lands in the area (Stuart, 1991).

While the upper Cullasaja offers a variety of outdoor recreation opportunities, three stand out. These are viewing the scenic waterfalls and gorge, photography, and nature study. The gorge offers outstanding opportunities for environmental interpretation and education with its diversity of geological features, the opportunity to understand geomorphic processes that created those features, game and nongame wildlife populations, the rare plants associated with waterfall spray and rock seepages, and natural community study.

The recreational resources of the upper Cullasaja River support its designation as a North Carolina Natural and Scenic River.

Historic Resources

Named for its high elevation, nearby Highlands is the highest town in the state. Incorporated in 1879 and established as a summer resort, Highlands has an average annual precipitation of 79 inches, the greatest of any place east of the Rocky Mountains. The Highlands Biological Station, a non-profit research and field training center for the study of plants and animals, was established here in 1927 (Powell, 1968).

Early economic activity in the area centered on farming and lumber. Over the years, the area increasingly became known as a resort area because of its high altitude and clean mountain air. Tourism developed as an economic activity and summer homes were built. The following locally significant resources support Natural and Scenic River designation of the upper Cullasaja River.

Highlands Hydroelectric Plant

In 1925, the little town floated bonds to finance a water and electric system and a limited sewer system. With the bond funds, a municipal dam and power plant were built on the Cullasaja River two miles west of town in 1927. The powerhouse and concrete arch dam, 23 feet high and 208 feet long, were constructed and Lake Sequoyah created. The project financing was troubled but did survive the Great Depression, and the bonds eventually were paid off.

This power plant is locally significant because it brought electricity to a part of Macon County and was a part of a larger effort to bring electricity to the North Carolina mountains. Businesses and residents replaced kerosene lamps with electric light bulbs, and water no longer had to be carried from the Smith spring. The dam and powerhouse are representative examples of typical early twentieth century industrial architecture.

The present appearance of the dam and powerhouse is approximately the same as when the plant was constructed in 1927, although in a deteriorated state. The original 225 kilowatt generating turbine and generator were removed when the Town of Highlands retired the facility in 1968. The powerhouse, constructed in 1927, is a simple stone and concrete structure resting on a concrete foundation. Measuring 17 feet wide by 25 feet long by 30 feet high with a wood-shingled roof, it is devoid of ornamentation.

In the 1930's, the town began to purchase electricity from larger, more efficient steam electric plants to supplement its electrical needs. The Highlands Hydroelectric Plant, like many other hydroelectric plants, was shut down because it became cheaper to purchase electricity than to make expensive repairs and operate a small, inefficient generating facility (Davis, 1992).

The powerhouse, located approximately 2,000 feet northwest from the Lake Sequoyah Dam, falls within the 7.5-mile Cullasaja River segment that is the focus of this study. It is now owned by the USFS (Kidd, 1999).

An application to reopen the plant was submitted to the Federal Energy Regulatory Commission (FERC) in the early 1990's. The proposal, which received opposition for environmental and aesthetic reasons, was dropped in May of 1996 when the Fall Line Hydro Company withdrew its application for license. The Notice of Withdrawal of Application for License stated ". . . *the project would be uneconomical due to the uncertainty that deregulation of the electrical utility industry has created.*" (FERC, 1996).

U.S. 64 Through the Cullasaja Gorge

Road building over mountains and steep terrain is particularly difficult, and a lack of good roads made early traveling in the mountains and Macon County a problem. Several major road projects were undertaken in the 1920's. The most ambitious project and one of the most important during this period was the construction of U.S. 64 from Gneiss to Highlands through the perilous Cullasaja Gorge.

In 1924, N.C. Highway Commission staff reviewed a survey and field notes and determined that a road through the gorge was unbuildable because of steep and treacherous terrain. Shortly thereafter, a decision to proceed was made at the district level. In 1925, using air compressors, wagon drills, a steam shovel, farm wagons for hauling, fourteen mules, and two horses, the project began. Twenty black prisoners built the road and lived along the route in temporary camps. Local labor completed some of the work including drilling, blasting, and bridge building. Timber from the mountain sides was used for bridges, and stone for the road base came from a quarry near Short Creek Falls. The road was completed by 1929 without serious accidents (Martin, 1994).

With completion of U.S. 64, the beauty and majesty of the Cullasaja Gorge became easily accessible for the first time. This road is significant because it allowed county residents to venture out more often and also served to bring in the outside world. Tourism and concomitant hotels, lodges, vacation retreats, and restaurants developed, changing forever the county's landscape.

Civilian Conservation Corps Development

During the Great Depression, the federal government instituted a body of government spending programs aimed at alleviating the lingering economic stagnation. One of these, the CCC, had two purposes: to create jobs and to conserve the nation's natural resources.

Operated jointly by the U.S. Army, the U.S. Department of the Interior, and the U.S. Department of Agriculture, the CCC was a quasi-military organization. Its enrollees constructed and lived in camps and worked forty-hour weeks, led by skilled craftsmen and World War I veterans.

The CCC quickly moved into North Carolina, establishing 66 camps by the end of 1935. A total of 50 of these camps were assigned to either the protection and preservation of forests or soil

erosion control. The CCC workers undertook numerous projects around the state until World War II marked the end of the CCC (Summer, 1992).

In Macon County, the CCC built fire towers, worked in erosion control, improved timber stands, built trails, erected telephone lines, and restocked trout streams. The primary activities centered on road building and improvements in the National Forest (Martin, 1994).

The CCC work in the Cullasaja Gorge included improving the path to Dry Falls, building observation points, road improvements, and the development of the Cliffside Recreation Area, including construction of the shelters and bathhouse.

THREATS TO THE RIVER

The upper reaches of the Cullasaja River are thermally impacted during the summer months by surface releases from the impoundments around the Highlands area. The water in Lake Sequoyah, Mirror Lake, and other impoundments warms from the heat of the sun, and warmer surface waters are then released downstream as they flow over the crests of the impoundments. Cold water releases from below the lake surfaces would provide cooler water with higher dissolved oxygen levels that would be beneficial to aquatic fauna downstream (WRC, 1998).

These impoundments above the gorge have the beneficial effect of serving to trap sediments resulting from private and commercial construction, road construction, and other ground disturbing activities. Still, sediments and other run off from developed areas and golf courses threaten the river's water quality.

The Division of Water Quality's water quality-use support rating for the segment of the Cullasaja from the Lake Sequoyah Dam 8.5 miles downstream is ST (fully supporting but threatened). This rating was given due to benthic invertebrate community metrics. Benthos were sampled in 1992 and 1994 about a mile below the dam, and the biological metrics used rated these communities as "good-fair." Good-fair translates into ST for use support. The Cullasaja will be reevaluated by field biologists later in 1999 (Leslie, 1999).

The Town of Highlands uses the upper portion of the river for municipal waste water discharge. Their wastewater discharge permit was recently reissued for their fairly new 500,000 gallons-per-day plant, currently about 50% loaded. Highlands' wastewater treatment plant discharges treated effluent to the Cullasaja just downstream of Lake Sequoyah Dam. Highlands may request an expansion at some future date. Objections to the issuance of permits has come from the Franklin area downstream from the Cullasaja Gorge (Westall, 1999).

The Town of Highlands, wary of the potential effects that federal designation as a federal Wild and Scenic River may have on future wastewater discharge permits, has expressed concern that federal designation might effect the economic well-being of the town (Cleaveland, 1994). Federal designation allows land uses already in existence to continue. If discharges were determined to adversely impact or degrade the values for which the river was federally designated, corrective actions would be required. Any expansion of the treatment plant would have to be reviewed for its potential effect to the river and its values (Phillips, 1994).

The North Carolina Natural and Scenic Rivers Act, however, does not address wastewater discharges, nor does the North Carolina Division of Water Quality have rules that require a stricter standard for discharge permits issued on, above, or below a designated state natural or scenic river.

Thousands of visitors annually visit the Cullasaja Gorge. The number of visitors would likely have a small increase if the Cullasaja River is designated by the General Assembly as a state scenic

river. While adding economically to the area's tourism industry, increased visitation to the gorge would bring additional visitor impacts. The bulk of this visitation to the gorge is concentrated at a few points, including the scenic U.S. 64 drive and Dry Falls. The USFS estimates that 300,000 people visit Dry Falls annually, with most of this visitation coming during the summer and on weekends (Boniface,1999).

Some species have declined around Dry Falls. While it is easy to attribute the decline to the heavy number of tourists there, there is likely little or no impact to these species from casual falls-watchers. Rather, the demise of rare plant species can probably be attributed to over collecting by botanists. Indirect impacts from rockhounds may also be detrimental (Roe and Mansberg, 1984).

Special timber management by the USFS serves to protect the gorge. Future timber management in the gorge will be limited to maintenance of observation points, prescribed burning, removal of hazardous dying trees and other such cases. Silvicultural activities on private property, however, may have future detrimental effects on the river.

FEDERAL WILD AND SCENIC RIVER DESIGNATION

Letters from several statewide conservation groups, local community groups, the American Whitewater Affiliation, and individual citizens supporting state and/or federal rivers designation have been sent to Governor Hunt; the Secretary of Environment and Natural Resources; the Secretary of the Interior; the Secretary of Agriculture; the National Park Service; and others. This support resulted in Governor Hunt writing to the Secretary of Interior and the Secretary of Agriculture on October 20, 1994, to request that 23.6 miles of the Cullasaja River be studied for possible inclusion in the federal Wild and Scenic Rivers System. Responses to Governor Hunt's letters were favorable and indicated that the Cullasaja would be added to the Nationwide Rivers Inventory (NRI) and then studied through the National Forest planning process (Frampton, 1994; Rominger, 1994). The responsibility for Wild and Scenic River study and any subsequent federal designation of the Cullasaja River rests primarily with the USFS since the river runs through lands owned and managed by the USFS.

The USFS automatically conducts Wild and Scenic River eligibility studies for rivers within its boundaries that are listed on the NRI. The Cullasaja River was not listed on the original (1982) NRI because its length was under 25 miles, and rivers less than 25 miles were not included. The 25-mile criterion applied in the 1982 NRI was not a reflection of a river's relative quality or its potential for federal river designation, but rather a means of keeping the initial inventory at a manageable level (Frampton, 1994).

The State of North Carolina nominated the Cullasaja River and several other rivers that were shorter than the former 25-mile criterion in late 1994, and these rivers were added to the NRI by the National Park Service. The USFS will therefore be studying the Cullasaja River through its national forest planning process when the forest management plan is revised. Revision of the forest management plan will be undertaken soon. In the meantime, by the Cullasaja River being listed on the NRI, the USFS will administratively act to conserve river resources within a .25-mile wide corridor on each side of the river pending the eligibility study and determination of suitability for Wild and Scenic River designation.

The river and the gorge are currently identified in the forest management plan for special management to protect and maintain the scenic, biological, and geological features. Management emphasis allows low-impact recreation for viewing scenery, scientific study, and photography (Phillips, 1995).

While no eligibility determination for federal Wild and Scenic River designation has been made, a preliminary assessment indicated that the Cullasaja River is potentially eligible. The USFS considers it free-flowing below Lake Sequoyah, and recognizes the gorge as botanically diverse, scenically beautiful, and geologically unique in the Southern Blue Ridge (Phillips, 1994).

In addition to a study process followed by congressional designation, rivers may also be federally designated under authority granted to the Secretary of the Interior. Such administrative designation must follow state legislative action to designate a river as a state river. A river or river segment so designated must be permanently administered as a wild, scenic, or recreational river by an agency or political subdivision of the state.

Should the 7.5-mile Cullasaja River segment become a North Carolina Natural and Scenic River, the federal administrative designation would not be a viable alternative for designation of the Cullasaja River. The gorge is under USFS ownership and administration, and the federal government, not the state, manages the river (Brittain, 1994). Therefore, federal designation of the Cullasaja River will require an act of Congress.

RECOMMENDATIONS

- The 7.5-mile long Cullasaja River segment starting at USFS property below the spillway of Lake Sequoyah should be designated as a component of the North Carolina Natural and Scenic Rivers System. Outstanding geological, biological, and scenic resources warrant the designation, while other resource values add support for designation. The segment also meets or exceeds criteria required for inclusion in the rivers system. Designation would recognize and add some limited protection to an area that is biologically diverse, scenically beautiful, and geologically unique.

- Of the three types of state rivers, the 7.5-mile Cullasaja River segment best fits the *Scenic* classification and should be designated a Scenic river. The segment clearly does not qualify as a natural river area because of the amount of access, the presence of U.S. 64, and other evidence of man. Scenic river designation requires lands to be largely primitive and largely undeveloped, which is true of the gorge. Scenic resources — along with geological and biological resources — are the outstanding resources of the segment. Recognition of these resources with *Scenic* designation, the next highest classification to *Natural*, is appropriate. Scenic designation is also consistent with the segment being a part of the Mountain Waters National Scenic Byway.

- No state land acquisition is recommended. The USFS owns and manages most of the Cullasaja Gorge except for a few small private property inholdings. These inholdings are within the National Forest purchase unit and are a part of the USFS's land acquisition plans. Opportunities for purchase from and/or exchange with willing sellers will be explored by the USFS as these lands become available and funds for purchase are allocated (Kidd, 1999). Funds for additional National Forest land purchases, however, have been limited in recent years. The state may be in a position to assist in the purchase of inholdings or in a position to purchase inholdings and then trade for other USFS property. Such opportunities to cooperate with the USFS to assist with the long-term protection of the Cullasaja Gorge should be investigated.

- No special state management activities requiring additional personnel are recommended. The USFS has been and continues to manage the Cullasaja Gorge in such a manner as to protect its outstanding resources while also allowing appropriate limited recreational use.

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PLANT AND ANIMAL STATUS

Federal Status

This status is designated by the U.S. Fish and Wildlife Service. Federally listed Endangered and Threatened species are protected under the provisions of the Endangered Species Act of 1973, as amended.

Status	Definition
Endangered	A taxon in danger of extinction throughout all of a significant portion of its range.
Threatened	A taxon likely to become an endangered species within the foreseeable future throughout all of a significant portion of its range.
Proposed	A taxon proposed for official listing as endangered or threatened.
Candidate	A taxon under consideration for which there is sufficient information to support listing.

State Status

Plant statuses are determined by the Plant Conservation Program (N.C. Department of Agriculture) and the Natural Heritage Program (N.C. Department of Environment and Natural Resources). Endangered, Threatened, and Special Concern species are protected by state law (Plant Protection and Conservation Act, 1979). Candidate and Significantly Rare designations indicate rarity and the need for population monitoring and conservation action.

Animal statuses are determined by the Wildlife Resources Commission. Endangered, Threatened, and Special Concern species of mammals, birds, reptiles, amphibians, freshwater fishes, and freshwater and terrestrial mollusks have legal protection status in North Carolina. The Natural Heritage Program maps Significantly Rare and Extirpated species.

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